AVAILABLE: Library of Congress

Card 5/5

IS/bg
8-20-59

AUTHORS: Serensen, S.V., Kogayev, V.P., Stepnov, L.N. 32-3-26/42
Gnatsintov, Ye.V.

TITLE: On the Law Concerning the Distribution of Durability in Fatigue Tests (O zakone raspredeleniya dolgovechnosti pri ustalostnykh ispytaniyakh)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol. 21, Nr 3, p. 321-322(USSR)

ABSTRACT: In connection with the statement made to the effect that the logarithmic law of the distribution of durability is not confirmed by experiments, other distribution functions were suggested by Freudenthal and Gumbel [Ref. 6] Weibull [Ref. 7] and others. In the present paper the correctness of the logarithmic standard law was checked, and the existence of a "sensitivity threshold according to cycles" was established as a fact. 143 samples were investigated. A graphical drawing for tensions of 30, 25 and 21 kg/mm² given; the curve for 21 kg/mm² indicates the phenomenon of the sensitivity threshold. In the course of further experiments the latter is found also in the case of greater stresses. From the

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Moscow Institute of Steel and

On the Law Concerning the Distribution of Durability in Fatigue Tests 32-3-26/32

experiments and a mathematical process the hypothesis expounded already in an earlier work [Ref. 1] is confirmed, so that the conclusion may be drawn that the law mentioned in the title is applicable in the case of the static treatment of results obtained by fatigue tests. There are 3 figures, 1 table, and [illegible] references, 6 of which are Slavic

ASSOCIATION: Moscow Institute for Aviation Technology (Moskovskiy aviatsionnyy tekhnologicheskiy institut)

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1. Fatigue (Mechanics) Durability -Distribution 2. Mathematics- Theory

Card 2/2

CIA TS Ukrainian Ye. U.

25(2);14(10) PHASE I BOOK EXPLOITATION SOV/2739

Akademiya nauk SSSR. Institut mashinovedeniya

Problemy prochnosti v mashinostroyenii. vyp. 3 (Strength Problems in Mechanical Engineering, No. 3) Moscow, Izd-vo AN SSSR, 1959. [illegible] p. Errata slip inserted. 3,000 copies printed.

Ed.: S.V. Serensen, Academician, Ukrainian SSR Academy of Sciences; Ed. of Publishing House: G.A. Nechayev; Tech. Ed.: N.F. Yegorova.

PURPOSE: This book is intended for design engineers and research workers in the fields of machine building and strength of structures. It may also be useful to students of corresponding specialties in advanced technical schools.

COVERAGE: This is a collection of 5 articles dealing with problems of strength and stability of cylindrical parts. Effect of cutouts, general conditions for the calculation of endurance, regressive analysis of fatigue, and measurements of limits of fluidity in impact loading are considered. References appear at the end of each article.

Stepnov, M.N., Yu. V. Gistaintsev, and V.P. Kozayev. Statistical Processing of the Results of Fatigue Tests on the Basis of Linear Regressive Analysis 71

The authors obtain fatigue diagrams based on the probability of deterioration in given conditions.

Tolochenko-Klinovitskiy, Yu. Ya. Measurement of the Limit of Fluidity in Impact Loading 80

The method of impact loading is described and diagrams showing the dependence of the limit of fluidity on loading and impact speeds are given.

AVAILABLE: Library of Congress

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12-30-59
IS/ec

Gliatsintov, Ye.U.

18(4) PHASE I BOOK EXPLOITATION SOV/2686

Moscow. Aviatsionnyy tekhnologicheskiy institut

Voprosy soprotivleniya materialov; prochnost' alyuminiyevykh splavov (Problems of the Strength of Materials; Strength of Aluminum Alloys) Moscow, Oborongiz, 1959. 117 p. (Series: Its: Trudy, vyp. 37) 3,600 copies printed.

Sponsoring Agency: Ministerstvo vysshego obrazovaniya SSSR.

Ed. (Title page): S.V. Serensen; Ed. (Inside book): B.V. Zaslavskiy; Ed. of Publishing House: L.I. Sheynfayn; Tech. Ed.: L.A. Garnukhina; Managing Ed.: A.S. Zaymovskaya, Engineer.

PURPOSE: This collection of articles is intended for workers of engineering design offices, industrial laboratories and scientific institutes of the machine-building industry and for research fellows and students of advanced courses in schools of higher technical education.

COVERAGE: This collection consists of 8 articles in which mechanical properties of deformed aluminum alloys are described. The load-carrying capacity of parts

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made of these alloys is considered and some results of the investigation of the distribution of stresses and strains in parts and joints are given.

TABLE OF CONTENTS:

introduction of [illegible] combination of elastic properties of materials of the blade and disk are shown.

4. Stepanov, Ye.P. Investigation of Stresses in a Wedge Under a Triangular Load (Applied to Cutters) 52

The author uses the optic method of investigating stresses which makes possible an analysis of the applicability of corresponding theoretical solutions to the determination of a plane stressed state in cutters.

5. Kogayev, V. P. Basis for the Choice of an Equal Strength Beam for Calibrating Wire Tensometers in the Presence of Transversal Vibrations 62

In connection with the elaboration of equipment for the calibration of transmitters, calculation of an equal strength beam with transversal vibrations present is given.

6. Serensen, S.V., M.N. Stepnov, V.P. Kogayev, and Ye. V. Giatsintov. Stability of the Function of Distribution of Durability in Testing the Stability of Aviation Alloys 69

Problems of the stability of aviation structural alloys are considered in the static aspect in order to obtain a stable distribution of durability at various levels of stress.

7. Voronov, S.M. [Deceased], and M.N. Stepnov. Fatigue Limit of Aluminum Alloy AK5 With a Slatelike Structure of Fractures 85
The relation of fatigue to slatelike structure of fractures is analyzed in studying the stability of aviation structural alloys.

8. Stepnov, M.N. Surface Strengthing of Aluminum Alloys AK4-1 and UD17 by Hammer Hardening 96
Fatigue resistance of cold-hammered samples with changing parameters of the strengthened layer and the mechanical properties of the layer are described. The dependence of the value of final stresses on the hammering technology is shown and the strengthened layer are determined.

AVAILABLE: Library of Congress

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IS/gmp
12-9-59

PHASE I BOOK EXPLOITATION SOV/3416

Akademiya nauk SSSR. Institut mashinovedeniya

Vopросy prochnosti materialov i konstruktsii (Problems of Strength of Materials and Structures) Moscow, 1959. 399 p. Errata slip inserted. 3,200 copies printed.

Resp. Ed.: D. N. Reshetov, Professor, Doctor of Technical Sciences; Ed. of Publishing House: G. B. Gorshkov; Tech. Ed.: S. T. [illegible].

PURPOSE: This book is intended for engineers and scientists concerned with the problems of the strength of materials and constructions

COVERAGE: The book contains 28 articles on the strength of materials in general and of machine construction in particular. This collection was prepared under the direction of the Institute of Mechanical Engineering of the AS USSR in honor of Sergey Vladimirovich Serensen, one of the founders and directors of the national school of strength of materials, who recently completed 30 years of scientific activity. The [illegible] gives a short sketch of his life and professional activities. The collection is divided into two parts. The first part contains 13 articles on general problems of strength and the strength of machine construction materials. The second part contains 15 articles on dynamics and calculation of strength and rigidity. There are references at the end of each article.

PART II. DYNAMICS AND CALCULATION OF STRENGTH AND RIGIDITY

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AC/ms
6-27-60

STEPNOV, M.N.; GIATSINTOV, Ye.V.; KOGAYEV, V.P.

Statistical processing of results of fatigue tests based on linear regression analysis. Probl. proch. v mashinostr. no.3: 71-88 '59. (MIRA 12:11)
(Metals--Fatigue--Testing) (Mathematical statistics)

188200 2408 2808 1413

3/546/61/000/051/001/006
D040/D112

AUTHORS: Borodin, N.A., Giatsintov, Ye.V., Stepnov, M.N.

TITLE: The effect of the technology of fabrication of semiproducts made from D16 and V95 aluminum alloys on the mechanical properties of the latter

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 51, 1961, 5-38. Issledovaniya ustalosti i dlitel'noy staticheskoy prochnosti alyuminiyevykh splavov

TEXT: The article describes experimental investigations made to establish the optimum technological conditions for fabricating blanks of Д16 (D16) and В95 (V95) aluminum alloys, i.e. conditions resulting in the highest static and dynamic strength. The effect of the following factors was studied: the state of the blanks and the method by which they were heated prior to pressing; the pressing temperature; the heating procedure for hardening; the content of Fe and Si. The chemical composition of the alloys is as follows (Table 1):

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The effect of the ...

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Alloy	Heat no.	The content of elements, %							
		Cu	Mg	Mn	Fe	Si	Ti	Zn	Cr
D16	1	4.49	1.45	0.71	0.22	0.1[illegible]	0.03	0.07	-
	2	4.50	1.68	0.65	0.14	0.03	0.03	0.10	-
	3	4.17	1.40	0.68	0.32	0.036	0.03	0.10	-
V95	1	1.75	2.45	0.32	0.34	0.22		[illegible]	0.1[illegible]
	2	1.74	2.76	0.37	0.10	0.03	-	[illegible]	[illegible]
	3	1.84	2.82	0.30	0.16	0.50	-	[illegible]	[illegible]

The article includes details of procedure used for preparing [illegible] from cast ingots, the shape and dimensions of test specimens, the temperatures and duration of heating, and the mechanical testing techniques. The tests consisted in determining the static strength, the strength after long-time static tests, and the fatigue resistance. Static [illegible] rate are given in graphs and tables. Conclusions: (1) The [illegible]

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the fatigue strength and long-time static strength values depends considerably on the level of the stresses and the duration of destruction. The dependence of dispersion of the life values in fatigue tests on the reduction of stresses is not linear. For example, reduction of the stress level from $2\sigma_{-1}$ to $1.2\sigma_{-1}$ was accompanied by 2-6 times higher and even 15 times higher dispersion. However, in tests for long-time strength, the dispersion of the logarithm of the time up to destruction decreases linearly upon reduction of the stresses. This is due to an increase in the time needed for destruction, which leads to more complete homogenization of the metal structure and higher plasticity. (2) A comparison of the alloy properties based on the mean values of the mechanical characteristics is not sufficient, and may sometimes lead to wrong conclusions even although a large number of specimens is tested. For instance, the fatigue limit of specimens taken from V95 alloy bars pressed at 360°C was 9% lower than that of specimens from bars pressed at 450°C, but a comparison of the left confidence limits on fatigue curves plotted for 5% failure probability whereby dispersion of the properties was taken into account, proved that the life of the alloy pressed at 360°C was 1.5-2 times longer. Analogous results were obtained in comparisons of the D16 and V95 alloys. (3) The studied technological factors affect the

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D040,D112

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strength and dependability of the D16 and V95 alloys in the following way. (a) Homogenizing of ingots prior to pressing results in a considerable reduction of the dispersion of the fatigue and long-time static characteristics, and an increase in their life. The life determined by the left confidence limits of the fatigue and long-time strength curves for a 99% destruction probability increases 1.2÷2 times; (b) Heating of ingots in induction furnaces instead of in electric resistance furnaces prior to pressing, results in a slightly shorter life in fatigue tests (up to 10-30%) and has scarcely any effect on the long-time static strength; (c) Increasing the pressing temperature from 360÷380°C to 450÷460°C is accompanied by a continuous increase of the dispersion of the fatigue resistance and the fatigue limit values (upon a temperature increase to 410-420°C). The optimum pressing temperature for the D16 alloy is 420°C, and for the V95 alloy - 360-410°C; (d) Heating for hardening in a saltpeter bath or in a vertical air furnace gives equivalent results as far as the static and fatigue characteristics are concerned; (d) Reduction of the Si and Fe content lowers the dispersion and increases the fatigue resistance in both alloys and increases the D16 alloy. The optimum Si content in the V95 alloy, giving the greatest long-time strength is about 0.[illegible]%. V. M. [illegible].

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D040/D112

The effect of the ...

P.G. Miklyayev and F.K.Bal'zovskiy participated in the experiments. There are 16 tables, 21 figures and 6 Soviet references.

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188200 2408, 2808, 1413

S/536/61/000/051/002/006
D040/D112

AUTHORS: Giatsintov, Ye.V., Stepnov, M.N., Kogayev, V.P.,

TITLE: The fatigue behavior of an aluminum alloy used for helicopter rotor blades

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 51, 1961, 39-66. Issledovaniya ustalosti i dlitel'noy staticheskoy prochnosti alyminiyevykh splavov.

TEXT: The article describes an extensive experimental investigation of the fatigue behavior of avial used for the longerons of helicopter rotor blades. Its chemical composition is (in %): 0.23 Cu, 0.99 Mg, 0.01 Mn, 0.34 Fe, 0.82 Si, 0.05 Zn, 0.25 Cr, 0.05 Ti. Tests for fatigue during bending and alternating tension and contraction, as well as for corrosion fatigue in fresh and sea water were carried out with smooth and notched specimens and specimens with circular incisions and holes. The stresses were applied both symmetrically and asymmetrically. The test data were statistically processed, con-

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fidence limits in fatigue curves being plotted for different failure probabilities. МУИ-6000 (MUI-6000) bending test machines working at 6000 rpm were used for the pure bending tests, and 6-ton pulsators with a frequency of 300 cps were used for the tension-contraction tests. It is stated that the obtained experimental data may help to determine the bearing capacity of the longerons of helicopter rotor blades. Conclusions: (1) The tests of smooth and notched specimens as well as corrosion fatigue tests have demonstrated that the dispersion of life values increases upon a reduction of the stress. (2) The durability limits and the sensitivity to stress concentration decrease noticeably upon decreasing probability of failure. (3) The fatigue tests have revealed a sharp reduction of the life and the fatigue limits under the continual effect of a corrosive medium. (4) The dispersion of the fatigue properties decreases when the corrosiveness of the medium and the concentration of stresses are increased. (5) The investigated alloy is highly sensitive to asymmetry of the stress cycle. N.A. Borodin, F.K. Bal'zovskiy, I.I.Vetkin, M.I.Poretskiy and Z.Ye.Shnurov took part in the investigation. R. Gauland, G.Neyber, I.A.Oding and S.Ye.Gurevich are mentioned. There are 24 figures, 15 tables and 16 references: 12 Soviet and

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The fatigue behavior ...

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D040/D112

4 non-Soviet-bloc. The two references to English-language publications read as follows: Lazan, R.J., and Blatherwick, A.A., Strength Properties of Rolled Aluminum Alloys under Various Combinations of Alternating and Mean Axial Fatigue Stresses, ASTM, 1953, vol. 53; Jensen, H.T., The Elements of a Helicopter Fatigue Substantiation Program, Fatigue in Aircraft Structures, 1956.

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31648
S/536/61/000/051/003/009
D040/D112

AUTHORS: Giatsintov, Ye.V., Stepnov, M.N., Kogayev, V.I.

TITLE: The effect of stress concentration on the fatigue of V95 aluminum alloy

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no.51, 1961, 67-73. Issledovaniya ustalosti i dlitel'noy staticheskoy prochnosti alyuminiyevykh splavov

TEXT: Examination of the effect of stress concentration on the fatigue of B95(V95) aluminum alloy, confirmed conclusions made previously for 45 steel (Ref.1, Kogayev, V.P., "Vestnik mashinostroyeniya", 1959, no.1), i.e. that the dispersion of the life values in fatigue tests decreases with increasing stresses, that the dispersion also decreases with rising stress concentration if the comparison is made at equal nominal stresses or at equal mean lives, but that there is no apparent dependence between the dispersion of the life values and the level of the stress concentration, if the comparison is made at equal maximum stresses in the concentration zone. The chemical composition of the alloy is (in %): 1.75 Cu, 2.45 Mg, 0.32 Mn, 0.34 Fe, 0.22 Si, 6.49 Zn.

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The effect of stress ...

0.13 Cr, 0.07 Zr. Test specimens were prepared from pressed metal of only one heat. The tests consisted in torsional bending at 3000 cycles per minute. Some of the specimens were notched with nearly hyperbolical notches; the hyperbola was straightened by means of G.V.Uzhik's method and the theoretical stress concentration factors (α_σ) were calculated by Neyber's formulas. The obtained data are presented in a table and three graphs, illustrating the dependence of the root-mean-square deviation of the life on the mean life, on the nominal stress, and on the maximum stress. The curves show a sharp increase of the root-mean-square deviation ($\bar{s}$) of the logarithm of the number of cycles lg N upon an increase of the mean life or upon a decrease of the nominal stresses, but the effect of the nonuniformity of the stress distribution in the zone of stress concentration is not reflected by the curves when the comparison is made at equal maximum stresses. This regularity, revealed in the tests of 45 steel and V95 aluminum alloy, may considerably facilitate the plotting of complete fatigue-probability curves and cut the necessary experimental work by using the characteristics obtained on smooth specimens for estimating the probability of failure in stress concentration spots. It is pointed out that the formerly employed characteristic of the sensitivity factor is not entirely correct. The conclusion is made that

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further studies of the dependence of $\frac{\sigma_{max}}{\sigma_{-1}}$ (where σ_{max} is the maximum stress in the stress concentration zone and σ_{-1} the endurance limit) on the stress gradients and absolute dimensions in light alloys will lead to more accurate strength calculation methods for machine parts. There are 3 figures, 3 tables and 4 Soviet references.

X

Card 3/3

GIATSINTOV, Ye.V.; STEPKOV, M.N.; KOGAYEV, V.P.

Fatigue properties of aluminum alloys used for helicopter blades. Trudy MATI no.51:39-66 '61. (MIRA 15:1)
(Aluminum alloys--Fatigue)
(Helicopters--Rotors)

GIATSINTOV, YEVGENIY VALENTINOVICH

PHASE I BOOK EXPLOITATION SOV/6290

Serensen, Sergey Vladimirovich, Yevgeniy Valentinovich Giatsintov, Vladimir Petrovich Kogayev, and Mikhail Nikitovich Stepnov

Konstruktsionnaya prochnost' aviatsionnykh splavov (Structural Strength of Aircraft Alloys Used in Aviation Engineering). Moscow, Oborongiz, 1962. 100 p. (Series: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, vyp. 54). 2100 copies printed.

Sponsoring Agency: Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya RSFSR. Moskovskiy aviatsionny tekhnologicheskiy institut.

Ed.: B. V. Zaslavskiy, Candidate of Technical Sciences; Ed. of Publishing House: B. V. Zaslavksiy; Tech. Ed.: A. Ya. Novik; Managing Ed.: A. S. Zaymovskaya, Engineer.

PURPOSE: The book is intended for scientific research workers, as well as for design and process engineers working in various branches of the machine-building industry using light alloys.

Card 1/~~3~~2

COVERAGE: Results of fatigue tests of aluminum alloys used for manufacturing rotor blades of helicopters are presented. The effect of the state of the surface layer, corrosive media, dimensions, and certain coatings on fatigue resistance is discussed, along with experimental data which may be used for determining the carrying capacity of structures. F. K. Bal'zovskiy, N. A. Borodin, I. I. Vetkin, and G. T. Ivanov took part in the experimental work. The authors express their thanks to M. I. Poretskiy and Z. Ye. Shnurov for their assistance. There are 41 references: 19 Soviet, 12 English, 9 German, and 1 French.

TABLE OF CONTENTS:

ACCESSION NR: AT4044778 S/2536/64/000/061/0005/0018

AUTHOR: Kogayev, V. P., Glatsintov, Ye. V., Stepnov, M. N.

TITLE: Fatigue strength of AVT alloy and the scale factor

SOURCE: Moscow. Aviatsionny*y tekhnologicheskiy institut. Trudy*, no. 61, 1964. Konstruktsionnaya prochnost' legkikh splavov i staley (Structural strength of light alloys and alloy steels), 5-18

TOPIC TAGS: AVT alloy, aluminum alloy, alloy fatigue, fatigue strength, scale factor, stress concentration, statistical strength theory, fatigue limit distribution

ABSTRACT: Samples of AVT alloy (diam., 40 or 8 mm; tensile strength 36.4 kg/mm^2, yield point 33.5 kg/mm^2, relative elongation 14.2%) were fatigue tested (rotary bending, 2^6 - 10^8 cycles, 10 - 19 kg/mm^2) to determine the effects of absolute dimensions of sample cross section on fatigue strength. Statistically processed results were plotted as fatigue curves corresponding to various failure probabilities, as endurance distribution functions in relation to sample diameter or stress level, or as fatigue limit distribution functions in relation to sample diameter or number of cycles. Ratios of primary significance to principles governing the effects of the scale factor and of stress concentrations on endurance (considering dispersion) are illustrated, a nomogram is evolved for deter-

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ACCESSION NR: AT4044778

mining $\xi = \sigma_{max}/u$ in relation to d/G, P in % and the distribution function parameters m and u/σ_0 (P = failure probability, u = minimal strength threshold below which P = O) and the authors present numerical calculations of stress concentration sensitivity. It is concluded that these basic ratios describe adequately the effects of scale factor and stress concentration on fatigue strength, considering dispersion of endurance characteristics. Values found for m, u and σ_0 can serve for the calculation of fatigue limits of actual parts in relation to P, and can therefore be used in fatigue calculations based on assumptions of probability. Orig. art. has: 3 tables, 9 graphs, and 18 numbered formulas.

ASSOCIATION: Aviatsionny*y tekhnologicheskiy institut, Moscow (Institute of Aviation Technology)

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SUB CODE: MM NO REF SOV: 005 OTHER: 003

Card 2/2

ACCESSION NR: AT4044780 S/2536/64/000/061/0026/0037

AUTHOR: Borodin, N. A., Giatsintov, Ye. V., Kogayev, V. P., Stepnov, M. N.

TITLE: Fatigue strength of aluminum alloys during an asymmetric stress cycle

SOURCE: Moscow. Aviatsionny*y tekhnologicheskiy institut. Trudy*, no. 61, 1964. Konstruktsionnaya prochnost' legkikh splavov i staley (Structural strength of light alloys and alloy steels), 26-37

TOPIC TAGS: aluminum alloy, alloy fatigue strength, asymmetric stress cycle, critical stress amplitude, mean stress, endurance characteristic dispersal, mean alloy life, alloy AVT, alloy AVG, alloy AVT1, alloy VD17, alloy AK4-1, alloy 24S-T4, alloy 14S-T6, alloy 75S-T6

ABSTRACT: Experimental data obtained by others were processed statistically to analyze the effects of an asymmetric stress cycle on fatigue strength of aluminum alloys. Results for a group of ten alloys indicate that the latter are quite sensitive to cycle asymmetry, with $\psi = 0.25 - 0.4$ for $N = 10^7$ cycles. A sharper decrease in the peak stress amplitudes $\sigma_{a\,p}$ accompanied low values of mean stress σ_m for a number of the tested alloys and ψ proved variable. The function $\sigma_a = \sigma_{-1}(1 - \frac{\sigma_m}{\sigma_v})$, where σ_v is tensile strength and σ_a

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ACCESSION NR: AT4044780

is stress amplitude, is evolved for approximate evaluations of $\sigma_{a\,p}$ for asymmetric cycles when σ_m varies by 0 - 0.3 from the tensile strength. The factor ψ decreases as endurance increases, down to 50% of its initial value when N increases from 10^4 to 10^7. Dispersal of endurance characteristics increases for an asymmetric cycle as σ_a drops and endurance increases. It is lower for the asymmetric than for the symmetric cycle at equal absolute σ_a. The discrepancy in mean square deviation $\bar{S}$ decreases as σ_a increases. Dispersal is nearly identical at equal average endurance for either stress cycle, except that it is somewhat lower for the symmetric cycle at high average endurance values. Orig. art. has: 5 tables, 12 graphs and 3 formulas.

ASSOCIATION: Aviatsionny*y tekhnologicheskiy institut, Moscow (Institute of Aviation Technology)

SUBMITTED: 00 ENCL: 00

SUB CODE: MM NO REF SOV: 002 OTHER: 001

Card 2/2

ACCESSION NR: AT4044785 S/2536/64/000/061/0086/0104

AUTHOR: Stepnov, M. N.; Glatsintov, Ye. V.; Kogayev, V. P.

TITLE: Resistance of alloyed Cr-Ni-V steel to recurrent loads in the elastic-plastic range

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 61, 1964. Konstruktsionnaya prochnost' legkikh splavov i staley (Structural strength of light alloys and alloy steels), 86-104

TOPIC TAGS: alloy steel, martensitic steel, chromium nickel vanadium steel, recurrent load resistance, recurrent stress test, recurrent stress compression test, recurrent bending test, pulsating recurrent stress cycle, plastic deformation growth, hysteresis loop width, stainless steel

ABSTRACT: Samples of a martensitic Cr-Ni-V steel (yield point 59.3 and 51.9 kg/mm^2, tensile strength 71.0 and 60.0 kg/mm^2 at 20 and 325C, respectively) were subjected to pulsating cycles of recurrent stress (7--10 cpm, asymmetry factor $\rho = 0.1$), recurrent stress-compression (7--10 cpm, $\rho_2 = -08$ to -1.0, deformation $\varepsilon_{max} = 0.30$--1.5%, N = 4^2--2^5, $\sigma_{max} = 33.2$--59.0 kg/mm^2, $\sigma_{min} = -17.8$---54.8 kg/mm^2) and recurrent bending load (cylce duration 15--20 sec., N = 1000 cycles, max load 26.7 T or 32 T for one sample, 29.3 T for another). The results indicate that rupture

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KOGAYEV, V.P.; GRINSHKOV, Ye.V.; SHIRNOV, M.P.

Fatigue resistance of the AV1 alloy and its [illegible] factor. Trudy MATI no.61:5-18 '64.

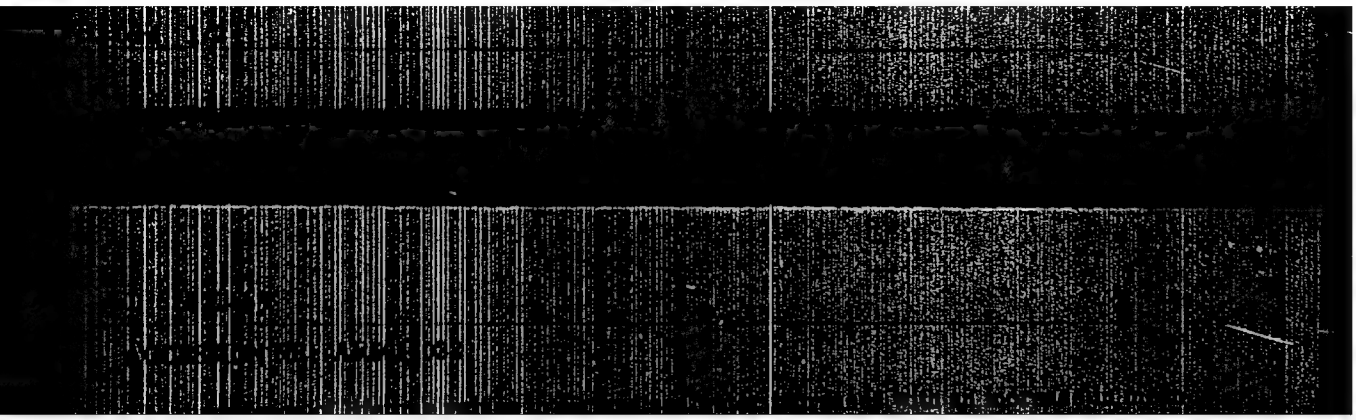
Resistance of alloyed chromium-nickel-vanadium steel to repeated loading in the elastoplastic area. Ibid.:8-[illegible]

[illegible]

[illegible], M.A.; GIATSINTOV, [illegible]; [illegible]

Fatigue resistance of al[illegible] alloys in [illegible] an asymmetric stress cycle. Trudy MAI no. [illegible] [illegible]

[illegible]



GIATSINTOV, Ye.V., kand.tekhn.nauk; [illegible], V.N., kand.tekhn.nauk

Investigating the fatigue resistance of the material SAF-1 [sintered aluminum powder]. Trudy MATI no.[illegible] 1955.

(MIRA [illegible])

L 15840-66 EWT(1)/EWP(m)/EWP(e)/EWP(w)/EWA(d)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)

ACC NR: AT5027920 IJP(c) JD/MJW SOURCE CODE: UR/2536/65/000/062/0057/0066

AUTHOR: Glatzintsev, Ye. V. (Candidate of technical sciences); Stepnov, M. N. (Candidate of technical sciences)

ORG: Moscow Aviation Technology Institute (Moskovskiy aviatsionnyy tekhnologicheskiy institut)

TITLE: Study of the fatigue limit of SAP-1 sintered aluminum powder

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 62, 1965. Obrabotka davleniyem legkikh splavov (Pressure working of light alloys), 57-66

TOPIC TAGS: sintered aluminum powder, fatigue test, metal cladding, corrosion, sheet metal, metal stress/ SAP-1 sintered aluminum powder

ABSTRACT: Three types of specimens of SAP-1 sintered aluminum powder were investigated with respect to their fatigue limit: flat bare sheets and flat Al-clad sheets (bending tests) and cylindrical specimens cut from pressed strips (loading tests). Fatigue tests always involve a considerable scatter of experimental findings owing to the statistical nature of the process of fatigue breakdown. Hence the authors employed a statistical method of processing the findings on the fatigue tests of the specimens. The nature of this method was as follows: a curve of service life as a function of probability of rupture for a given stress is plotted on the basis of test

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2

findings for a group of specimens at some stress level. To this end the experimental findings (numerical totals of cycles until rupture) are ordered as follows

$$N_1 < N_2 < N_3 \ldots < N_i \ldots < N_n.$$

The probability of rupture is estimated according to the accumulated frequency

$$\frac{i-0,5}{n},$$

where n is the number of specimens tested at a given stress level and i is the ordinal number of the corresponding specimen in the progressively increasing series of cycle totals. Findings: the cladding of sheet specimens of SAP-1 reduces the fatigue limit in the case of a service life of $N < 5 \cdot 10^5$ cycles when the probability p of rupture is 50% and in the case of $N < 1.8 \cdot 10^5$ cycles when p = 5% (Fig. 1). If $N > 5 \cdot 10^5$ cycles, on the other hand, the service life of clad sheets virtually coincides with that of nonclad sheets. (The fatigue limit of the cylindrical specimens proved to be somewhat higher.) Thus, cladding sharply reduces the scatter of points on the curve of service life. The additionally performed corrosion-fatigue tests in fresh water showed that the relative corrosion resistance of SAP is extremely high. The decrease in fatigue limit as a function of stress (Fig. 2) owing to the corro-

Card 2/5

L 15640-66
ACC NR: AT5027920

0

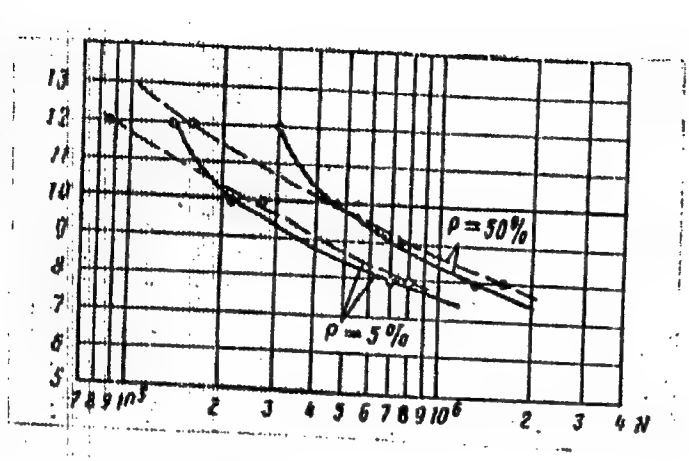


Fig. 1. Fatigue curves

- - - - - - - clad specimens

———— nonclad specimens

Card 3/5

L 15640-66
ACC NR: AT5027920

σ_B, kg/mm^2

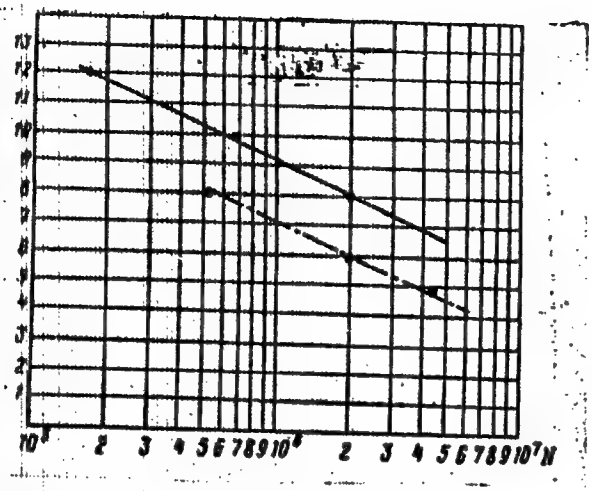


Fig. 2. Fatigue curves (cylindrical specimens)

——————— in air

- - - - - - - - - in fresh water

Card 4/5

L 15[illegible]

ACC NR: AT5027920

sive effect of fresh water averages 2 kg/mm^2 over the interval of service life from $N = 5 \cdot 10^5$ to $N = 5 \cdot 10^6$ cycles. Orig. art. has: 2 formulas, 5 tables, 11 figures.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 000/ OTH REF: 000

Card 5/5

GLATSINTOVA, K.V.

Improving the quality of concentrates. Tsvet. met. 33 no.9:77-78 S '60. (MIRA 13:10)

1. Karamazarskiy rudnik.
(Ore dressing)

GIATSINTOVA, N.A.

Five year application of bar splints in amphodontosis. Stomatologiia no.4:43-46 Jl-Ag '54. (MLRA 7:9)

1. Iz kafedry ortopedicheskoy stomatologii (zav. prof. V.Yu.Kurlyandskiy) Moskovskogo meditsinskogo stomatologicheskogo instituta (dir. dotsent G.N. Beletskiy) i Upravleniya (nachal'nik prof. A.M.Markov) Ministerstva zdravookhraneniya SSSR.

(PERIODONTIUM, diseases,
ther., splinting)

GIATSINTOVA, P.P.

Method for detecting iodine in biological material. Izv. AN Kir. SSR. Ser. biol. nauk 2 no.6:95-99 '60. (MIRA 14:6)
(IODINE--ANALYSIS)

GIATSINTOVA, P.P.

Some characteristics of iodine metabolism in different forms of endemic goiter. Sov.zdrav.Kir. no.2:32-34 Mr-Ap '63.
(MIRA 16:5)

1. Iz laboratorii endemicheskikh zabolevaniy (nauchnyy rukovoditel' - prof. I.K. Akhunabayev) Instituta Krayevoy meditsiny (dir. - M.A. Aliyev) AN Kirgizskoy SSR.
(IODINE METABOLISM) (KIRGHIZISTAN--GOITER)

KHRUSTALEV, A.A.; ALEKSANDROVA, N.N.; GIAZATOVA, A.F.

Feeding of miners in the mines. Vop. pit. 19 no.3:15-17 My-Je '60. (MIRA 14:3)

1. Iz kafedry gigiyeny pitaniya (zav. - prof. A.A.Khrustalev) I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M. Sechenova i sanitarno-epidemiologicheskoy stantsii Shchekinskogo rayona Tul'skoy oblasti.
(COAL MINERS--DISEASES AND HYGIENE) (NUTRITION)

GIBADULIN, P.A.

Compensatory hypertrophy of the thyroid gland. Biul.eksp.biol.i med. 54 no.7:84-87 Jl '62. (MIRA 15:11)

1. Iz laboratorii rosta i razvitiya (zav. - prof. L.D.Liozner) Instituta eksperimental'noy biologii (cir. - prof. I.N.Mayskiy) AMN SSSR, Moskva. Predstavlena deystvitel'nym chlenom AMN SSSR N.N.Zhukovym-Verezhnikovym.

(THYROID GLAND)

GIZETOLIN, S.A.

Regeneration of the thyroid gland. Fiziol. zhur. SSSR im. I. Sechenova 54 no.8:87-92 Ag '68. (MIRA 17:11)

1. Iz laboratorii rosta i razvitiya (zav. - prof. I.P. Lizerner) Instituta eksperimental'noy biologii (dir. - prof. I.P. Mayskiy) AMN SSSR, Moskva. Predstavlena deyatel'nym chlenom AMN SSSR N.N. Zinkevym-Vetrinkovym.

GIBADULIN, R.A.; BELOUSOV, L.V.; SHABADASH, A.L.; YEPIFANOVA, O.I.; CHERIVOVA, I.A.; ZALETAYEVA, T.A.; TIKHOMIROV, V.N.

Brief news. Biul. MOIP. Otd. biol. 69 no.1:145-156 Ja-F '64. (MIRA 17:4)

GIBADULIN, R.A.

Restorative processes in the thyroid gland following surgical interference. Trudy MOIP. Otd. biol. 71:21-55 '64.

(MIRA 18:1)

1. Laboratoriya rosta i razvitiya Instituta eksperimental'noy biologii AMN SSSR.

L 46646-66 EWT(m)/EWP(j)/T IJP(c) WW/RM

ACC NR: AR6021267 (A) SOURCE CODE: UR/0081/66/000/004/S006/S006

AUTHOR: Myagchenkov, V. A.; Gibadullin, L. A.

50
B

TITLE: Thermomechanical investigations of a series of methyl methacrylate copolymers

SOURCE: Ref zh. Khim, Part II, Abs. 4S31

REF SOURCE: Tr. Kazansk. khim.-tekhnol. in-ta, vyp. 33, 1964, 259-262

TOPIC TAGS: methacrylate plastic, thermal decomposition, heat property, copolymer, methylmethacrylate

ABSTRACT: The relationship between the glass temperature T_g and yield point T_y and the composition of a series of copolymers of methyl methacrylate and methacrylic acid (I) containing up to 20 mol % of the second component was examined thermomechanically. It was established that T_g and T_y increase linearly as the content of I increases, while the range of the highly elastic state remains almost constant. T_y for pure polymethylmethacrylate was calculated (370°) assuming additiveness of the contribution of I as its content is further increases. Direct evaluation of this value is impossible because of the low decomposition temperature of polymethylmethacrylate. Additions of up to 1% lithium

Card 1/2

L 46646-66

ACC NR: AR6021267

and potassium in the methacrylate system hardly change the characteristics of the given copolymer; this unequivocally indicates that the new component does not cause significant changes in its molecular weight. Yu. Panov. [Translation of abstract].

SUB CODE: 11, 20

Card 2/2

GIBADULLINA, R.S. (Kazan').

Chloroma diagnosed during lifetime. Klin.med. 31 no.3:83-84 Mr '53.
(MLRA 6:5)
(Tumors)

GIBALNVICH, M.

New organizational forms for the construction and maintenance of rural roads. Avt.dor. 23 no.11:8-10 N'60. (MIRA 13:11)

1. Nachal'nik Zaporozhskogo oblupravtoshosdora.
(Zaporozh'ye Province--Road construction)
(Collective farms--Interfarm cooperation)

POLAND/Magnetism - Experimental Methods of Magnetism F-2

Abs Jour : Ref Zhur - Fizika, No 5, 1958, No 10779

Author : Malecki, J., Surma M., Gibalewicz, J.
Inst : Adam Michiewich University, Poznan, Poland
Title : Measurement of the Intensity of Transient Magnetic Fields by the Faraday Effect.

Orig Pub : Acta phys. polon., 1957, 16, No 1-2, 151-156

Abstract : Pulsed magnetic fields were obtained by discharging a bank of capacitors through a coil. The magneto-optical Faraday effect was used to measure the intensity of the pulsed magnetic fields. A change in the intensity of light, due to the rotation of the plane of polarization, was determined by means of a photomultiplier and a cathode ray oscillograph. Magnetic fields up to 100,000 oersteds were measured. The optical media employed were CS_2, CCl_4, and H_2O.

Card : 1/1

GRABKA, A.

Polish fighters of the PZL-24 type produced in Turkey. p. 51.

TECHNIKA LOTNICZA. (Zwiazek Polskich Inzynierow i Techników Lotniczych) Warszawa, Poland. Vol. 14, No. 2, Mar./Apr. 1959.

Monthly List of East European accession (EEAI), LC. Vol. 8, No. 9 September, 1959. Uncl.

GIBALOV, G.P., kand. tekhn. nauk

"Gas turbine system of ship" by R.V.Rebrov. Reviewed by G.P. Gibalov. Teploenergetika 11 no.9(93) S '64. (MIRA 18:8)

Gibalo, I.M.

ALIMARIN, I.P.; GIBALO, I.M.

Radiometric titration. Zav.lab.21 no.1:1022-1027 '55. (MLRA 9:1)

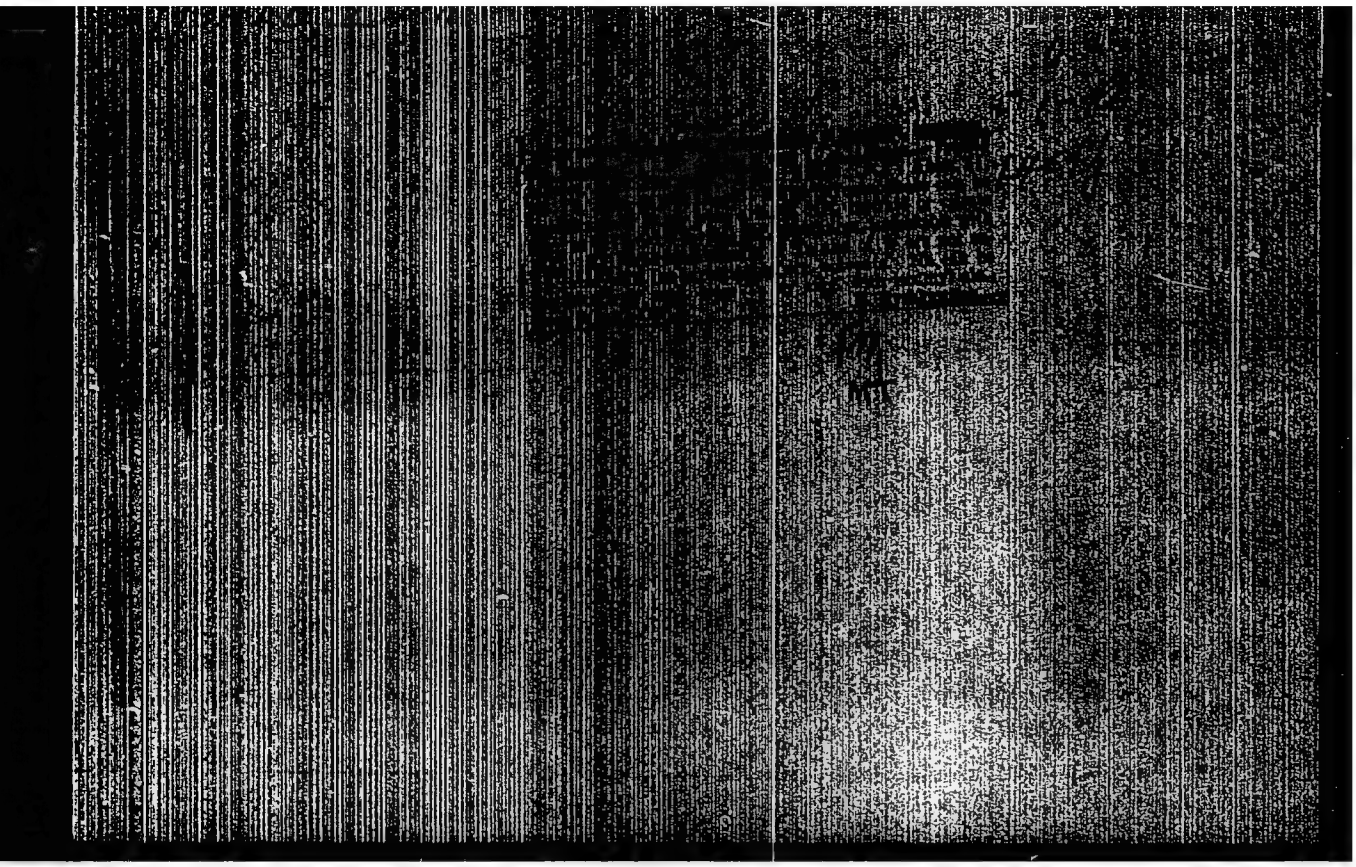
1.Moskovskiy gosudarstvennyy universitet.
(Volumetric analysis)

BELYAVSKAYA, T.A.; GIBALO, I.M.

"Quantitative analysis." V.N.Alekseev. Reviewed by T.A.Beliavskaia, I.M.Gibalo. Zav.lab.21 no.7:884-885 '55. (MLRA 8:10)

1. Kafedra analiticheskoy khimii Moskovskogo gosudarstvennogo universiteta.

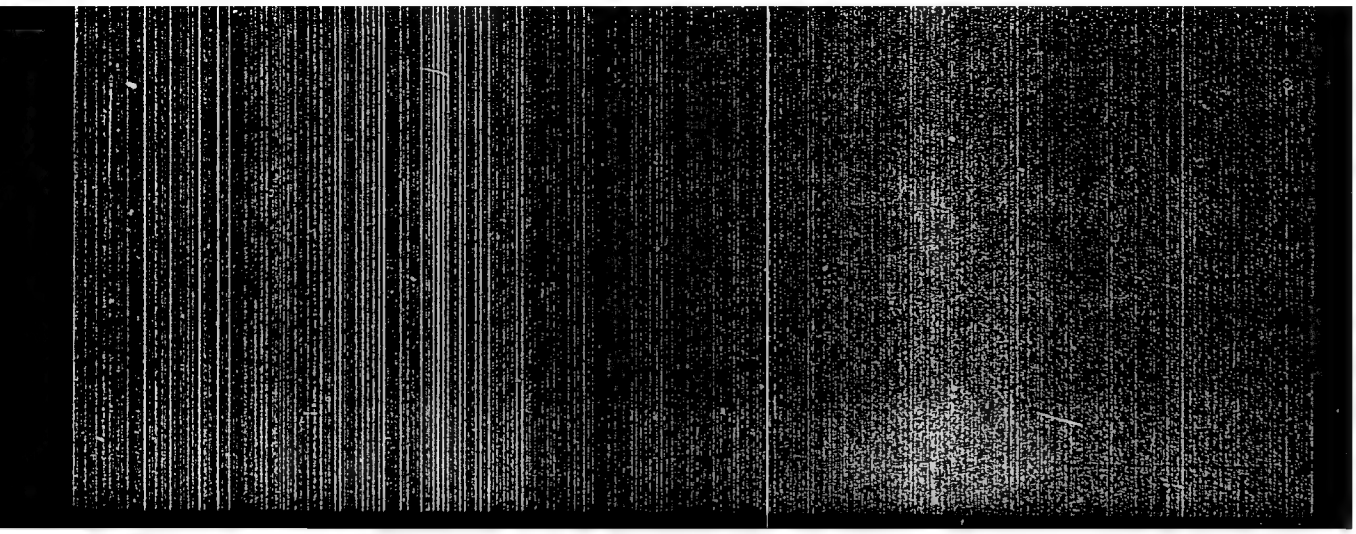
(Chemistry, Analytic--Quantitative)



GIBALO I.M.

TOPCHIYEVA, K.V.; PESHKOVA, V.M.; SHAKHOVA, Z.F.; ALIMARIN, I.P.; NOVOSELOVA, A.V.; SPITSYN, V.I.; LUTSENKO, I.F.; GERASIMOV, Ya.I.; NESMEYANOV, A.N.; TERENT'YEV, A.P.; POTAPOV, V.M.; GIBALO, I.M.

E.S. Przheval'skii; obituary. Vest. Mosk. un. Ser. mat. mekh., astron., fiz., khim. 11 no.2:205-207 '56. (MIRA 10:12)
(Przheval'skii, Evgenii Stepanovich, 1879-1956)



GIBALO, I. M.

USSR/Analytical Chemistry - General Questions C-1

Abs Jour : Referat Zhur - Khimiya, No 3, 1957, 8369

Author : Alimarin, I. P. and Gibalo, I. M.
Inst : Moscow University
Title : The Application of Complex Formation in the Separation and Determination of Elements by Extraction.

Orig Pub : Vestn. Mosk. un-ta, 1956, No 5, 55-59

Abstract : Acetylacetone (I) and Disodium diethylenediammoniumtetraacetate (II) form complexes of varying stability with various elements. The acetylacetonates in contrast to the complexonates are easily extracted by organic solvents, such as CCl_4. The behavior of the acetylacetonates of Fe, Be, Cd, Co, Ni, Mn, Cu, Pb, and Zn during extraction with CCl_4 in the presence of II has been investigated. Be is completely extracted with CCl_4 at pH 9. For the separation of Be from Fe, 5 ml of a 15% solution of I, 7 ml of 0.05M solution of II, 2 drops of conc. NH_4OH, and 7 ml of CCl_4 are added to 15 ml of a solution (pH 2-3) containing $BeSO_4$ and $FeCl_3$ in a separatory funnel. The mixture is shaken for five minutes and the organic phase is separated; the extraction is repeated a second time,

Card 1/2 -6-

GIBALO, I.M.

[illegible] Determination of Zirconium in Alloys by [illegible] Organic Acids Zirconia v [illegible] Zirconium Alloys. I. P. [illegible] Laboratory, v. 22, no. [illegible]

Procedure of Zr determination in pure solutions and in alloys as a phosphate or other compounds by volumetric titration with phosphoric acid.

Moscow State University

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000515020006-2"

Gibalo I. M.

Category: USSR/Analytical Chemistry - General Questions. G-1

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30939

Author : Alimarin I. P., Gibalo I. M.
Inst : Academy of Sciences USSR, Moscow State U.
Title : Extraction of the Cupferonates of Niobium, Tantalum and Titanium.

Orig Pub: Dokl. AN SSSR, 1956, 109, No 6, 1137-1139

Abstract: Experiments with Nb have shown that Nb-cupferonate (0.6-0.9 mg/ml Nb_2O_5) is extracted most completely, from solutions in 2% ammonium oxalate, tartrate and citrate, HCl and H_2SO_4 acidified with HCl, by means of chloroform, ethyl acetate, ether and isobutyric aldehyde (amount of the organic solvent 2 ml, volume of aqueous phase 13.5 ml). Alkali metals, NH_4^+, NO_3^-, SO_4^{2-} and increase of temperature up to 25-30° do not affect the extent of extraction. By analogous experiments it was shown that the Ta-cupferonate is readily extracted by organic solvents from acid solutions. A study has been made of the extraction of the cupfer-

Card : 1/2 -16-

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000515020006-2"

GIBALO, I. M., SIROTINA, I. A. and ALIMARIN, L. P., (Moscow State Univ im M. V. Lomonosov; Inst of Geochemistry and Analytical Chemistry im V. I. Vernadskiy AS USSR)

"Radiometric Titration of Rare Elements"

[illegible] and Detection in Chemistry, Collection of reports of 2nd [illegible] on Use of Radioactive and Stable Isotopes and [illegible] in Natural Sciences, Moscow, Izd-vo AN SSSR, 1956, [illegible]

[illegible] publication the reports of the Chemistry section of the [illegible] of Radioactive and Stable Isotopes and Radiation [illegible] Natural Sciences, [illegible] and Their [illegible]

AUTHORS: Gibalo, I.M., Byr'ko, V.M. 32-3-11/52

TITLE: The Radiometric Titration of Zinc and Cadmium With Potassium Ferricyanide (Radiometricheskoye titrovaniye tsinka i kadmiya ferrotsianidom kaliya)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 3, pp. 281-283 (USSR)

ABSTRACT: A titration method was worked out in which potassium ferrocyanide with Fe-59 is used as a reagent and samples can be taken during titration, the activity of which is determined. Work was carried out in a medium of sulfuric acid (1-2n) and a maximum error limit of 2.5% was determined. In order to accelerate determination (to 10-15 minutes) only two activities are determined and the result is calculated according to a given formula. In the titration of cadmium it was observed that there must be a surplus of potassium salt. From a sample containing both cadmium and zinc the sum was determined titrimetrically with potassium ferrocyanide (with Fe-59), with a surplus of potassium sulfate, after which the cadmium was precipitated with β-naphtoquinoline, and zinc was determined in the filtrate. The cadmium was then computed from the

Card 1/2

The Radiometric Titration of Zinc and Cadmium With Potassium Ferricyanide 32-3-11/52

difference. There are 3 tables, and 5 references, 5 of which are Slavic.

ASSOCIATION: Moscow State University imeni M.V. Lomonosov (Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova)

AVAILABLE: Library of Congress

1. Zinc-Titration 2. Cadmium-Titration 3. Potassium ferricyanide-Applications

Card 2/2

ALIMARIN, I.P.; GIBALO, I.M.; THIN' GUAN-ZHUN [Ch'in Kuang-jung]

Separation of niobium and tantalum from titanium and iron by the chromatographic method. Izv.vys.uchob.zav.;khim.i khim.tekh. 5 no.3:374-377 '62. (MIRA 15:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, kafedra analiticheskoy khimii.
(Niobium) (Tantalum)
(Ion exchange resins)

S/075/62/017/001/001/003
B106/B101

AUTHORS: Alimarin, I P, Gibalo I M, and Chin Kuang-jung

TITLE: Niobium determination by the method of differential spectrophotometry

PERIODICAL: Zhurnal analiticheskoy khimii, v 17 no 1 1962, 60-64

TEXT: Niobium in hydrochloric acid medium was determined by differential spectrophotometry According to published data, niobium in concentrated hydrochloric acid forms the compound $H[Nb(OH)_2Cl_4]$, whose absorption maximum lies at 281 mμ Spectrophotometric studies showed that real hydrochloric acid solutions of niobium are prepared with difficulty, and almost impossibly in the presence of tantalum To prepare real niobium hydrochloric acid solutions, a weighed portion of pure Nb_2O_5 was decomposed with potassium pyro-sulfate. The cold melt was dissolved in tartaric acid solution, and the solution mixed with concentrated hydrochloric acid The light absorption of this hydrochloric acid solution was measured with an СФ-4 (SF-4) spectrophotometer Complex niobium chloride,

Card 1/4

$H[Nb(OH)_2Cl_4]$ was formed with high chlorine ion concentration in acid medium. Maximum optical density of the solutions of the complex is attained at 28[illegible] mμ in [illegible] N HCl, or in 4 N HCl + [illegible] N LiCl or [illegible] N HCl + 5 N LiCl. Tartaric acid and small amounts of sulfate ions do not affect the light absorption. The solutions of the complex are stable for a practically unlimited period and follow Beer's law in the range of 0.38-[illegible]0 γ of Nb_2O_5/ml. The apparent molar absorption coefficient has the value of 9000. Iron, molybdenum, titanium (and, to a small extent, also tantalum) disturb the niobium determination described. Small amounts of titanium (Nb_2O_5 : TiO_2 = 14 : 1) and iron (Nb_2O_5 : Fe_2O_3 = 46 : 1) as well as tantalum up to a ratio Nb_2O_5 : Ta_2O_5 = [illegible] : 1.5, do not affect the accuracy of determination. Zirconium, tungsten, and rare earths have almost no effect on the determination. The niobium determination by differential spectrophotometry was, in principle, carried out according to published data (Refs. 1, 3, see below; Ref. 4: Dobkina, B. M., Ma'vatina, T. M., Zavodsk. laboratorija 24, 1336 ([illegible]); Ref. [illegible]: Hickey, C. F., Scott, J. Anal. Chem. 29, 1196 ([illegible])). The Nb_2O_5

concentration in the solution to be analyzed was 0.372-0.620 mg/25 ml. The method was used for determining niobium in three alloys with a major amount of niobium, 3-30 % tantalum, and minor amounts of titanium and iron. The weighed portion of alloy was dissolved in an $HF + H_2SO_4$ mixture. The solution was fumed off 2-3 times with sulfuric acid, and the residue calcined at 800-900°C. The resulting oxides were decomposed with potassium pyro-sulfate. After cooling, the melt was dissolved in 20 % tartaric acid, and mixed with concentrated hydrochloric acid. An aliquot part of this solution was diluted with 10 N HCl and 2 % tartaric acid, and then measured by differential spectrophotometry. The standard solution was prepared in a similar way; it contained 0.372-0.562 mg of Nb_2O_5/25 ml. The niobium content of the sample was determined from a calibration curve, and calculated from the formula $C_x = C_c + FD$ (C_x niobium concentration in the solution to be analyzed; C_c niobium concentration in the standard solution; $F = \Delta C/D$; $\Delta C = C_1 - C_2$). The results were compared with results of gravimetric determinations. The differential method is not superior in accuracy to the gravimetric method but reduces

Niobium determination by the... S/075/62/017/001/001/003
B106/B101

the time required for the analysis to 1/4 - 1/5. The error of the niobium determination described is ± 0.2-0.3 %. There are 3 figures, 4 tables, and 6 references: 1 Soviet and 5 non-Soviet. The three most recent references to English-language publications read as follows: Ref. 1: Blanks C. V., Burke B. E., Laughlin J. H., Thompson J. A., Anal. Chem. 29, 995 (1957); Ref. 3: Susano C. D., Menis O., Talbott C. K., Anal. Chem. 28, 1072 (1956); Majumdar A. K., Mukherjee A. K., Analyt. Chim. Acta 19, 23 (1958).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: March 24, 1961

Card 4/4

ACCESSION NR: AP3004696 S/0189/63/000/004/0073/0074

AUTHORS: Orlova, I. M.; Chi'in Kua-Jung 64 63

TITLE: Oxalate complexes of niobium and tantalum

SOURCE: Moscow, Universitet. Vestnik. Seriya II, Khimiya, no. 4, 1963, 73-74

TOPIC TAGS: niobium, tantalum, oxalate complex, oxalic acid

ABSTRACT: The composition and stability of oxalate complexes of niobium and tantalum in the presence of excess oxalic acid were studied by means of the ion-exchange resin EDE-10P. Pyrosulfate melts of niobium and tantalum pentoxides were dissolved in an excess of standardized 0.125-0.25 molar oxalic acid for niobium and 0.3-0.38 molar oxalic acid for tantalum. The solutions were allowed to pass through a column filled with the ion-exchange resin in its Cl-form. Here the oxalate complexes of niobium and tantalum (as well as the surplus oxalate ions) were sorbed. Upon rinsing with 0.5-1.0 normal HCl, the free oxalate ions were separated, while the ones bound to niobium or tantalum remain in the column. The desorption of the oxalate complexes of niobium was brought about by rinsing with 3-normal HCl containing 1% NH_4F, while 15-normal NH_4Cl containing 4% NH_4F

Card 1/2

L 15705-63
ACCESSION NR: AP3004695

caused the desorption of the tantalum complexes. Determination of niobium and tantalum was conducted by the gravimetric method, that of the oxalate ions by permanganate titration. It was found that the ratio of oxalate to niobium (or tantalum) was 2:1, as against the earlier assumption of 1:1. The oxalate complexes are stable at a pH range of 1.3 - 5. Orig. art. has: 1 formula and 1 chart.

ASSOCIATION: Moskovskiy universitet Kafedra analiticheskoy khimii (Moscow University, Department of Analytical Chemistry)

SUBMITTED: 23Jan63 DATE ACQ: 06Sep63 ENCL: 00

SUB CODE: CH NO REF SOV: 002 OTHER: 003

Card 2/2

L 21981-63 EWP(q)/EWT(m)/BDS AFFTC/ASD/JD

ACCESSION NR: AP3005759 S/0075/63/018/007/0835/0839

AUTHORS: Gibalo, I. M.; Alimarin, I. P.; Dawsdorph, F.

56
55
27

TITLE: Certain derivatives of dithiocarbonic acid as reagents for niobium

SOURCE: Zhurnal analiticheskoy khimii, v. 18, no. 7, 1963, 835-839

TOPIC TAGS: dithiocarbonic acid, niobium, reagent

ABSTRACT: Authors carried out studies on sodium piperidinedithiocarbaminate (NaPrDTK), ammonium phenylhydrazinedithiocarbaminate (NHyPDTK), ammonium pyrrolidinedithiocarbaminate (NHyPDTK), and sodium diethyldithiocarbaminate (NaDDTK). Purpose of the study was to select the most suitable reagent for niobium from this class. The niobium was precipitated by a 20-fold excess of the above-indicated reagents in a wide range of acidity. Results are tabulated. Tests results show that niobium is quantitatively precipitated from NH_4PDTK and NaPrDTK in a weakly acid (pH 4-5) and a strongly hydrochloric acid medium (8-10 N HCl). NaDDTK can be used only in a weakly acid medium pH 4-5). NH_4PDTK does not quantitatively precipitate niobium. The differences in the reactions of these reagents can be explained by their different stability in solutions. NH_4PDTK, for all practical purposes, does not decompose in aqueous solutions, whereas NaDDTK and NH_4PDTK

Card 1/2

L 19611-63

ACCESSION NR: AP3003759

decompose rapidly. The best reagent turned out to be NH PDTK, which authors used in further studies. Conditions for extraction of niobium pyrrolidinedithiocarbamate from tartaric, citric, and oxalic acid solutions were studied. Authors pointed out that niobium pyrrolidinedithiocarbamate can be quantatively extracted from concentrated hydrochloric acid solutions (8-10 N HCl) as well as from tartaric and oxalic acid solutions at pH 4-5. Conditions for back extraction of niobium from the organic phase were found. Orig. art. has: 4 figures and 3 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 29Jan63 DATE ACQ: 08Aug63 ENCL: 00

SUB CODE: CH NO REF SOV: 003 OTHER: 003

Card 2/2

L 10871-63 EWP(q)/EWT(m)/BDS S/020/63/149/006/015/027
AP3007488 JD

AUTHOR: Gibalo, I. M., Corresponding Member of the Academy of Sciences USSR, and Shmakova, L. P., and Davydorch, P.

56

TITLE: Extraction of niobium pyrrolidinedithiocarbamate

27

PERIODICAL: Akademiya nauk SSSR. Doklady. v. 149, no. 6, 1963, 1326-1327.

TEXT: Derivatives of dithiocarbamic acid are valuable analytic reagents to rare elements, but, aside from sodium diethyldithiocarbamate (Na = DDTC), they have not been sufficiently investigated. One of the less well-known derivatives of this kind is ammonium pyrrolidinedithiocarbamate (NH_4 = PDTC), a reagent that is more stable in aqueous solutions than Na = DDTC. It has been used for the gavimetric determination of niobium and its separation from tantalum by the precipitation method. The authors were the first to investigate the conditions of the quantitative precipitation of niobium by NH_4 = PDTC and the extraction of the resulting compound by different aqueously insoluble organic solvents. Experiments with different amounts of Nb_2O_5 (2-30 mg) showed that niobium pyrrolidinedithiocarbamate (Nb = PDTC) is quantitatively precipitated only from tartrate and oxalate solutions in the form of a white amorphous residue by 20-fold excess of reagents in the presence of acetate buffer at pH = 4-5. In the extraction of Nb = PDTC chloroform proved to be the best solvents. The relationship between extraction by chloroform and acidity of solution is established. There is 1 figure.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonsov) SUBMITTED: January 22, 1963

Card 1/1

ACCESSION NR: AP4033643 S/0075/64/019/004/0467/0469

AUTHOR: Gibalo, I. M.; Alimarin, I. P.; Davaadorzh, P.

TITLE: Separation of niobium from tantalum and titanium by extraction with ammonium pyrrolidinedithiocarbamate.

SOURCE: Zhurnal analiticheskoy khimii, v. 19, no. 4, 1964, 467-469

TOPIC TAGS: niobium analysis, tantalum, titanium, extraction, ammonium pyrrolidinedithiocarbamate

ABSTRACT: The article describes the possibility of separating niobium from tantalum and titanium by the extraction of niobium pyrrolidinedithiocarbamate (PDTC) in a weakly acidic as well as in concentrated hydrochloric acid. For checking the efficiency of extraction, use was made of Nb^{95} and Ta^{182}. The experiments have shown that in ammonium acetate buffer (pH = 5) Ta does not react with NH_4PDTC either in pure solutions or in the presence of niobium. The NbPDTC is satisfactorily extracted with chloroform in the presence of tantalum up to the ratio $Nb_2O_5:Ta_2O_5$ = 1:1.5. At a higher content of tantalum it is not possible to obtain quantitative separation. In concentrated HCl (9N) the extraction is analogous.

Card 1/2

GIBALO, I. M.

The Second All-Union Conference on the Preparation and Analysis of High-Purity Elements, held on 24-28 December 1963 at Gorky State University im. N. I. Lobachevskiy, was sponsored by the Institute of Chemistry of the Gorky State University, the Physicochemical and Technological Department for Inorganic Materials of the Academy of Sciences USSR, and the Gorky Section of the All-Union Chemical Society im. D. I. Mendeleyev. The opening address was made by Academician N. M. Zhavoronkov. Some 90 papers were presented, among them the following:

I. P. Alimarin, I. M. Gibalo, A. P. Golovina, and Yu. A. Mittsel'. Determination of Ta in high-purity silicon (up to 0.05 micrograms of Ta_2O_5 in 2 g SiO_2) by an extraction-luminescence method.

(Zhur. Anal. Khim, 19, No. 6, 1964, p 777-79)

L 12105-66 EWT(m)/EWT(t)/ETI IJP(c) JD/JG

ACC NR: AP6019493 SOURCE CODE: UR/0075/66/021/006/0718/0728

AUTHOR: Gibalo, I. M.

ORG: Moscow State University (Moskovskiy gosudarstvennyy universitet)

82
B

TITLE: Determination of impurities in high-purity niobium and tantalum

SOURCE: Zhurnal analiticheskoy khimii, v. 21, no. 6, 1966, 718-728

TOPIC TAGS: niobium, tantalum, flame, photometry, crystal impurity, niobium alloy, tantalum alloy, trace analysis, impurity center, spectrophotometric analysis, spectrometry, polarographic analysis

ABSTRACT: Methods for determining impurities in high-purity niobium and tantalum were reviewed. Direct determination of traces of impurities (10 10 %) is, in most cases, impossible and requires their concentration by such methods as extraction, coprecipitation or distillation. In some instances, impurities in niobium, tantalum, and niobium or tantalum pentoxides can be determined by spectrophotometry orspectrometry. The sensitivity of these methods can be improved by combining them with chemical methods. Brief data on the direct determination of impurities by the spectrophotometric method and on the determination of impurities by the spectroscopic and combined spectroscopic and chemical methods are given in the form of tables. Among other methods for determining impurities in high-purity niobium and tantalum, the following are briefly reviewed: polarographic determination of Pb, Sn, Cd, and Can in niobium and niobium alloys; determination of tantalum impurities in niobium and Nb_2O_5 by radioactivation analysis; determination of alakli metals by flame photometry. In conclusion, methods for determing nonmetallic impurities (sulfur, carbon and phosphorus) and gases (oxygen, hydrogen, and nitrogen) in niobium and tantalum are briefly reviewed. Orig. art. has 3 tables. [ATD PRESS: 5015-F]

SUB CODE: 11,07/ SUBM DATE: 27Jul65/ ORIG REF: 060/ OTH REF: 027

Card 1/1 af UDC: 543.70

L 47373-66 EWT(1)/EWP(v)/EWP(k)/EWP(h)/EWP(1)

ACC NR: AP6029066

SOURCE CODE: UR/0413/66/000/014/0122/0122

INVENTOR: Filonov, S. F.; Khakharev, L. M.; Gibalov, A. I.; Chugunov, V. K.; Maslov, G. I.

ORG: none

TITLE: Device for transferring gas of a free-piston generator. Class 46, No. 184065 /announced by Lugansk Order of Lenin Diesel Locomotive Building Plant im. October Revolution (Luganskiy ordena Lenina teplovozostroitel'nyy zavod)/

SOURCE: Izobret prom obraz tov zn, no. 14, 1966, 122

TOPIC TAGS: free piston generator, gas generator, pipeline, pneumatic servomechanism, valve, piston engine

ABSTRACT: The proposed device for the transfer of gas from a free piston generator (operating in a group of generators on a common gas pipeline) exhaust to the gas pipeline inlet contains atmospheric and main valves. In order to automate the gas transfer, the values are equipped with pneumatic servo drives, interlocked with a slide valve, controlling the main valve by a servodrive, and rigidly connected with the servodrive of atmospheric valve which receives a command signal from a electro-pneumatic valve (see Fig. 1). In a modified version of the above-described device,

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UDC: 621.432.9-129.31-577

L 47373-66
ACC NR: AP6029066

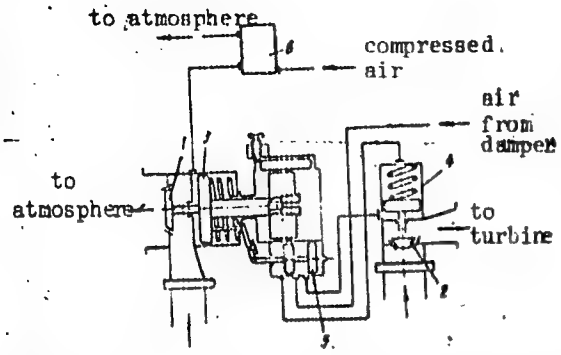

Fig. 1. Gas transfer device

1 - Atmospheric valve; 2 - main valve; 3 - servodrive of the atmospheric valve; 4 - servodrive of the main valve; 5 - slide valve; 6 - electropneumatic valve.

the servodrive of atmospheric valve was equipped with a damper in order to ensure gradual charging of the generator during the transfer of gas. Orig. art. has: 1 figure. [AV]

SUB CODE: 13,21,10/SUBM DATE: 15Mar65/

Card 2/2 mjs

L 20915-66 EWT(d)/EWT(m)/EWP(f)/EPF(n)-2/EWP(v)/T/EWP(t)/EWP(k)/ETC(m)-6 JD/WW/HM

ACC NR: AP6007624 (N) SOURCE CODE: UR/0229/66/000/001/0034/0040

AUTHOR: Filonov, S. P.; Gibalov, A. I.

ORG: Luganek Diesel-Locomotive Plant of October Revolution (Luganskiy teplovozostroitel'nyy zavod imeni Oktyabr'skoy revolyutsii)

TITLE: Gas-turbine plant with free piston gasifiers for river ships

SOURCE: Sudostroyeniye, no. 1, 1966, 34-40

TOPIC TAGS: marine engineering, gas turbine engine

ABSTRACT: A description of a gas-turbine plant designed and manufactured by the Luganek Diesel-Locomotive Plant is presented. The plant was designed for a 5300-ton river ship and consisted of two 925-hp turbine units (port and starboard) and three free piston gasifiers of OP-95 type. The plant specification is as follows:

Rated capacity	1850 hp
Rated one-hour capacity (forward)	2035 hp
Rated capacity (backward)	640 hp
Fuel consumption	195 g/hp-hr
Rated rpm (forward)	300 rpm
Rated rpm (backward)	180 rpm
Efficiency of the plant	32.6 %
Weight of the plant	36 ton
Unit weight of the plant	19.5 kg/hp

Card 1/3 UDC: 621.431.74:621.438

L 20945-66

ACC NR: AP6007624

The data on OP-95 gasifiers are given below:

Engine piston diameter	280 mm
Compressor piston diameter	750 mm
Piston stroke	375 mm
Compression rate (diesel cylinder)	11.5
Max. cycle pressure	120 ± 5 kg/sq cm
Average piston speed	8.9 m/sec
Rated capacity (adiabatic)	850 hp
Max. one-hour capacity (adiabatic)	935 hp
Gas pressure	4.5 atm
Gas discharge	2.3 kg/sec
Gas temperature	490 C
Number of cycles	735 cycles/min
Fuel consumption	152 g/hp-hr
Efficiency	41.5 %
Size	4000 x 1500 x 2300 mm
Weight	6000 kg
Unit weight	7.06 kg/hp

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L 20945-66

ACC NR: AP5007624

The five-stage turbine unit has the following ratings:

Rated capacity (forward)	925 hp
Rated capacity (backward)	320 hp
Rated rpm (on the shaft, forward)	9000 hp
Efficiency	78.5 %
Weight of the unit	9000 kg
Size	4018 x 2550 x 2616 mm

The fuel of DT-1 trade mark was used. The lubricants were of UT GOST 32-53 type. The design and operation of turbines and gasifiers were discussed and their cross-sections were shown in two figures. Flow diagrams were used for describing the operations of fuel and gas distribution systems. The arrangement of the pneumatic system was explained and the variation of air pressure under various operating conditions was graphically represented. Orig. art. has: 7 figures.

SUB CODE: 13 / SUBM DATE: None / ORIG REF: 000 / OTH REF: 000

NARTOV, Igor' Mikhaylovich, insh.; BORISOV, G.P., kand. tekhn.nauk, retsenzent; GIBALOV, G.P., dots., kand. tekhn.nauk, retsenzent; MOISEYEV, A.A., prof., nauchnyy red.; POLYAKOV, I.I., red.; KONTOROVICH, A.I., tekhn. red.

[English-Russian dictionary on gas turbine systems; with a supplementary alphabetical index of Russian terms]Anglo-russkii slovar' po gazoturbinnym ustanovkam; s prilozheniem alfavitnogo ukazatelia russkikh terminov. Leningrad, Sudpromgiz, 1962. 214 p. (MIRA15:11)
(Gas turbines--Dictionaries)
(English language--Dictionaries--Russian)
(Russian language--Dictionaries--English)

GIBAS, T.

"Cemented aluminum oxide, its basic properties and application", p. 33, (SZKLO I CERAMIKA, Vol. 6, No. 2, Feb. 1955, Warszawa, Poland)

SO: Monthly List of East Accessions, (KEAL), LC, Vol. 4, No. 5, May 1955, Unol.

GIRAS, T.

Influence of cementite liquation on quality of tools manufactured from high-speed steel. P. 57 MECHANIK Warszawa (Stowarzyszenie Inzierow i techikow Polskich) Vol. 28, no. 2, February 1955

SOURCE: EEAL LC Vol. 5, no. 7. July 1956

GIBAS, T.

POLAND / Chemical Technology. Chemical Products and Their Application--Ceramics. Glass. Binding Materials. Concrete H-13

Abs Jour: Ref Zhur-Khimiya, No 3, 1959, 8963

Author : Gibas, T.

Inst : Not given

Title : A Method of Scouring Clinkered Metal Oxides for Ceramographic Purposes

Orig Pub: Mechanik, 1957, 30, No 12, 545

Abstract: The preparation of specimens of clinkered metal oxides by grinding, polishing, and scouring of the fractured surface is described. For grinding on a cast-iron disk at 140 revolutions per minute, a B_4C powder of 320, 600, and 800 mesh in paraffin

Card 1/2

POLAND / Chemical Technology. Chemical Products and Their Applications. Ceramics. H

Abs Jour: Ref Zhur-Khimiya, 1959, No 4, 12517.

Author : Glinas, Tadeusz.
Inst : Not given.
Title : Ceramic-Metal Compounds. Part I.

Orig Pub: Szkło i ceram., 1958, 9, No 8, 234-238.

Abstract: Review of existing methods and those being developed for combining ceramics and metal (ke) by means of mechanical compounding (adhesion), applications of coatings and use of cermets. For adhesion of ceramic heads to blades, B-21 glues, epoxy resins and "araldite" (Switzerland) were used, the stability of which was completely sufficient on the section and comprises (kg/cm^2): at 20° 1.9-5.3, at 100° 0.9-3.2.

Card 1/4

POLAND / Chemical Technology. Chemical Products and Their Applications. Ceramics. H

Abs Jour: Ref Zhur-Khimiya, 1959, No 4, 12517.

Abstract: Ceramic coatings on various Me can be applied by the method of spraying, by fusion immersion, condensation of Me vapors (on the ceramic) or the sintering of Me powders in metal form (Al_2O_3, ZrO_2 and ZrO_2 65% plus SiO_2 35%) was patented by two American firms and is used for applying protective ceramic coatings on the details of aviation engines and other objects.

In the USSR, methods are used of coating ceramic blocks with Cu or a permalloy (7.8% Ni plus 92.2 Fe) for the purpose of their subsequent soldering to lathe-cutting tools. On the surface of ferrous Me, a layer of Cu_2O mixed with a solution of

Card 2/4

POLAND / Chemical Technology. Chemical Products and Their Applications. Ceramics. H

Abs Jour: Ref Zhur-Khimiya, 1959, No 4, 12517.

Abstract: colophony in turpentine applies well; after 5-7 hours of sintering at 1050-1100° on Mo, a shiny, slippery coating is obtained. Coatings of Fe-Ni-Co powders are well obtained on ceramics with a 10% glass additive (in the form of a paste in the same solvents) after sintering at 950-1050°.

A series of methods was developed for obtaining ceramic coverings on Me or Me on ceramics by means of reducing Me compounds into a gaseous stage, for example, a coating on metallic Cr from CrB_2 on Cr, Ni, Mo, W from TiP; on Mo from $MoSi_2$; on W from WSi; on any Me from Al_2O_3 by means of the interrelation in the gaseous phase of $AlCl_3$ plus CO_2

Card 3/4

POLAND / Chemical Technology. Chemical Products and Their Applications. Ceramics. H

Abs Jour: Ref Zhur-Khimiya, 1959, No 4, 12517.

Abstract: plus H_2; from SiO_2 by means of the reaction of $SiCl_4$ plus CO_2 plus H_2; from ZrO_2 by means of the reaction of $ZrCl_4$ plus CO_2 plus H_2. -- S. Glebov.

Card 4/4

GIBAS, T.

POL/JMD/Chemical Technology. Chemical Products and Their Application. Ceramics. Glass. Binding Materials. Concrete.

Abs Jour: Ref Zhur-Khim., No 10, 1959, 35661.

Author : Gibas, T.
Inst :
Title : Metal-Ceramic Compounds.

Orig Pub: Szkło i Ceram, 9, No 9, 262-267 (1958) (in Polish)

Abstract: Questions pertaining to the technology of the production of cermets (C) are discussed. The production of stable aggregates of ceramic powders with metals (M) involves a decrease in free energy. During the sintering a mutual wetting of the ceramic and M components should take place. The wetting depends on the surface tension (S) of the M ( ), the S at the interface between

Card : 1/4

POLAND/Chemical Technology. Chemical Products and Their Application. Ceramics. Glass. Binding Materials. Concrete. H

Abs Jour: Ref Zhur-Khim., No 10, 1959, 35661.

the solid and liquid phases (γ_{sl}), and on the surface energy of the principal (ceramic) component (γ_s), and can be expressed by the equation: $\gamma_s = \gamma_{sl} + \gamma_l \cdot \cos\theta$, where θ is the contact angle between the M and the ceramic material. When $\theta < 90^o$, good wetting will be observed and the surface energy will be less than 1000 dyn/cm. For $\theta \geqslant 90^o$ the wetting and the production of a strong C are made more difficult. Values of θ and γ_l for a number of ceramic materials and M (Ag, Al, Bi, Na, Cu, and Sn) are given. The C can be divided into four groups, depending on their

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